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FARMING for FISH: Is Aquaculture Part of the Solution?

On a forty-acre salt pond at the western end of the tiny island of Cuttyhunk, MA, a farmer tends his crop. He motors out into the pond and hauls up a cage filled with oysters. He selects those that are ready for the market, and lets the others and their cage sink back into the water column, where they will continue to filter-feed on natural nutrients in the clean, well-circulating water



Seth Garfield has raised oysters on Cuttyhunk for the past thirteen years. He's one of a small but growing number of people who hope that fish-farming may be one answer to the steep decline in fish and shellfish to be caught in the open ocean.



Seth Garfield checks on his crop at the Cuttyhunk Shellfish Farm

West End Pond on Cuttyhunk is an unusual, almost ideal site. It has an inlet to the ocean, which mixes the pond's water twice a day, and brings in new nutrients for the oysters and clams Seth grows from seeds, which are young, fingernail-sized oysters. Because Cuttyhunk is ten miles from the mainland, the ocean water that surrounds it is practically unpolluted, though pleasure boats can create problems.

Seth carefully monitors the health of the pond, working with local and state officials, and, from time to time, with marine biologists. (Several WHOI researchers were studying the pond's health last summer.)

Still, the success of his crop is anything but certain. "A land-based farmer can buy a farm and be farming the next day," says Seth. "That farmer could have a field full of lettuce a month later.

Oysters take two to three years to grow to maturity." In that time, many things could go wrong. In 1991, Hurricane Bob swept much of the nutrient base out of West End Pond, which created a serious crisis for the farm.

AQUACULTURE IN AMERICA

Aquaculture, or the captive growing of fish, shellfish and marine plants, it is not yet a big enough business in this country to absorb all those thrown out of work by the fishing crisis. Hank Parker, Aquaculture Program Coordinator for the United States Department of Agriculture says that "less than ten percent of U.S. fisheries production comes from aquaculture." By far the biggest U.S. aquaculture crop is catfish. Oysters, salmon, crawfish, trout, baitfish and ornamental fish are also important. But he adds, "We're a drop in the bucket compared to other countries." For hundreds of years, Asia has led the world in aquaculture.



Assa Lombard, who works at the farm, holds a "Japanese lantern" net used to grow oysters in different levels of the water column.

OLD AND NEW

Hundreds of years? Isn't aquaculture a new field? Not at all. Archaeologists have found shell heaps left thousands of years ago by coastal tribes. These people kept fish and shellfish they gathered alive by placing them in holding baskets and submerging them in fresh-flowing water. There, the animals would grow until their captors ate them. Today, science and technology are changing the way fish and shellfish are farmed. Genetic engineers breed strains that resist disease. Chemists experiment with nutrients. Engineers create new ways to hold the plants and animals as they grow to market size.

Aquaculture is also being seen as a way to re-use resources, such as heated water, that are output by factories. Farmers can re-use water and nutrient resources via aquaculture as well. Says Hank Parker: "There is clearly an industrial need for a 'whole earth' philosophy to happen. Aquaculture is an alternative, a way to capture and reuse what might otherwise be waste."

STOCKING UP

With the worldwide decline in wild fish stocks, the need for new ways to raise these important protein sources is more apparent than ever.

Dale Leavitt, a biologist who works as a fisheries and aquaculture specialist in the WHOI Sea Grant program, using aquaculture to replenish wild stocks of sea scallops. Scallops are raised from eggs in a hatchery on Martha's Vineyard.

Dale and others are taking the baby scallops into the ocean, to a depleted area. "We'll see what kind of return we get from that," he says.

Restocking scallops is tricky. "They are interesting animals," says Dale, "because they're mobile. They move all over the place. They look like butterflies, taking off with each valve clap. You can't just put them on the bottom and expect them to be there a year later."

Dale, a former fisherman, is committed to aquaculture. But he's cautious. "Aquaculture is very popular right at the moment," he says. "A lot of people are trying to sell it as being the saviour of the fishing industry." Perhaps in time the industry will be big enough to try to solve fisheries problems.



Seth culls market-ready oysters

Seth Garfield scoops up some seed oysters. In two years, they will be big enough to sell.

IDEAL SETTING

Still, operations like Seth Garfield's send a message of hope. Each summer evening, Seth motors through Cuttyhunk Harbor, selling shellfish to boaters relaxing and enjoying the sunset. By adding a taste of just-harvested seafood to the pleasures of a beautiful spot, and a happy moment, Seth also puts forward a message of conservation. For without the clean waters in which his oysters grow, a tasty aspect of that moment's pleasure would not be possible.